

REMARKS

Claim 4 has been cancelled, without prejudice.

Claim 1 has been amended to recite "[a] recombinant microorganism of *Escherichia coli* being capable of producing vitamin B6, wherein said microorganism carries extra nucleic acids encoding an enzyme combination selected from:

- i) erythrose 4-phosphate dehydrogenase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 1 and SEQ ID NO: 2 and 1-deoxy-D-xylulose 5-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 5 and SEQ ID NO: 6;
- ii) erythrose 4-phosphate dehydrogenase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 1 and SEQ ID NO: 2 and pyridoxol 5'-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 9 and SEQ ID NO: 10; and
- iii) erythrose 4-phosphate dehydrogenase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 1 and SEQ ID NO: 2, 1-deoxy-D-xylulose 5-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 5 and SEQ ID NO: 6 and pyridoxol 5'-phosphate

synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 9 and SEQ ID NO: 10.”

Support for this amendment is found in the specification at, for example, page 1, lines 10-24; in Examples 1-12; and in original claim 1. See *In re Gardner*, 177 USPQ 396, 397 (CCPA 1973) and MPEP §§ 608.01(o) and (l) (8th ed. Rev. 6, Sept. 2007, pp. 600-92 and 600-84).

Claim 7 has been amended to depend from claim 3 and to recite “a pH value in the range of about 6.5 to 7.5.” Claim 8 has been amended to depend from claim 3 and to recite “a temperature in the range of from 34°C to 37°C.” Support for these amendments is found in the specification at, for example, page 4, lines 1-6.

It is submitted that no new matter has been introduced by the foregoing amendments. Approval and entry of the amendments is respectfully solicited.

Objection to the Specification:

The Examiner objected to the specification because “a claim to foreign priority to EPO 02021623.0 filed 09/27/2002” does not “appear in the specification following the title, preferably as a separate paragraph” (Paper No. 20070926 at 2).

It is respectfully submitted that the Examiner is mistaken. There is ***no requirement*** that the specification be amended to recite a claim for ***foreign priority*** under 35 U.S.C. § 119(a-d). See MPEP § 201.11; see *also* 37 CFR §§ 1.78(a)(2) and (a)(5). In view of the Examiner’s error, it is respectfully submitted that the Examiner’s objection to the specification is moot and should be withdrawn.

§112, First Paragraph Rejections:

1. Written Description

Claims 1, 3, 4, and 6-8 have been rejected under 35 U.S.C. §112, first paragraph. (Paper No. 20070926 at 4). In making the rejection, the Examiner asserted that “[t]he claims are drawn to a genus of recombinant microorganisms comprising a genus of erythrose 4-phosphate dehydrogenases, a genus of 1-deoxy-D-xylulose-5-phosphate synthases, and a genus of pyridoxol 5' -phosphate synthases for which no structure and amino acid or nucleotide sequence is apparent.” (*Id.*). The Examiner then concluded that “one of skill in the art would not recognize that applicants were in possession of the claimed genus of recombinant microorganisms and process for producing vitamin B6 using the claimed genus of recombinant microorganisms.” (*Id.* at 5).

The Examiner suggested “[a]mending the claims to recite a recombinant *E. coli* transformed with polynucleotides having specific SEQ ID NOS encoding erythrose 4-phosphate dehydrogenase, 1-deoxy-D-xylulose-5-phosphate synthase, and pyridoxol 5'-phosphate synthase” (*Id.*).

With a view towards furthering prosecution, claim 1 has been amended to recite “[a] recombinant microorganism of *Escherichia coli* being capable of producing vitamin B6, wherein said microorganism carries extra nucleic acids encoding an enzyme combination selected from:

- i) erythrose 4-phosphate dehydrogenase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 1 and SEQ ID NO: 2 and 1-deoxy-D-

xylulose 5-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 5 and SEQ ID NO: 6;

- ii) erythrose 4-phosphate dehydrogenase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 1 and SEQ ID NO: 2 and pyridoxol 5'-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 9 and SEQ ID NO: 10; and
- iii) erythrose 4-phosphate dehydrogenase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 1 and SEQ ID NO: 2, 1-deoxy-D-xylulose 5-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 5 and SEQ ID NO: 6 and pyridoxol 5'-phosphate synthase encoded by a polynucleotide obtained from *E. coli* chromosomal DNA by PCR using primers of SEQ ID NO: 9 and SEQ ID NO: 10."

As amended, claim 1 (from which claims 3 and 6-8 depend) recites, *inter alia*, specific primers to be used to obtain the recited enzymes, namely erythrose 4-phosphate dehydrogenase, 1-deoxy-D-xylulose-5-phosphate synthase, and pyridoxol 5'-phosphate synthase. In view of these amendments, the Examiner's concern regarding the scope of the claims is rendered moot.

In view of the foregoing, it is respectfully submitted that the rejection has been rendered moot and should be withdrawn.

2. Enablement

Claims 1, 3, 4, and 6-8 have been rejected under 35 U.S.C. §112, first paragraph, for lack of enablement. (Paper No. 20070926 at 2). In making the rejection, the Examiner acknowledged that the specification is "enabling for (1) a recombinant *E.coli* host transformed with plasmids comprising a polynucleotide encoding erythrose 4-phosphate dehydrogenase obtained from *E.coli* chromosomal DNA ..., a polynucleotide encoding 1-deoxy-D-xylulose-5-phosphate synthase obtained from *E.coli* chromosomal DNA ..., and a polynucleotide encoding pyridoxol 5'-phosphate synthase obtained from *E.coli* chromosomal DNA ...," and (2) "a process for preparing vitamin B6 comprising culturing said recombinant *E.coli* host;" (*Id.*).

The Examiner, however, asserted that the claims were not commensurate in scope with the disclosure in the specification. (*Id.* at 2-3). In making this determination, the Examiner asserted "the claims encompass **any** recombinant microorganism capable of producing vitamin B6 which carries extra genes coding for **any** erythrose 4-phosphate dehydrogenase, **any** 1-deoxy-D-xylulose-5-phosphate synthase, and **any** pyridoxol 5' -phosphate synthase, where the genes and enzymes are from **any** biological source for which no structure and amino acid or nucleotide sequence is apparent, and **any** process for preparing vitamin B6 using said recombinant microorganism." (*Id.* at 3) (emphasis added).

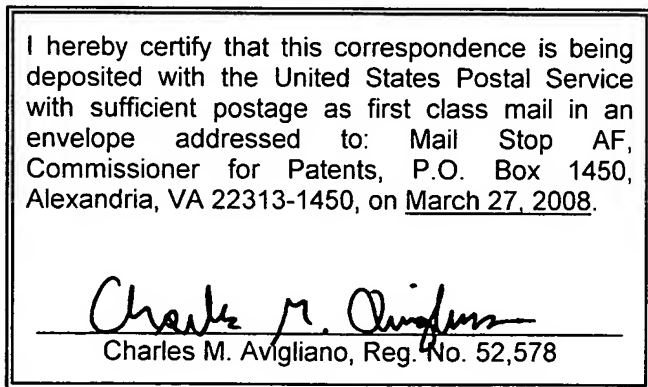
The Examiner suggested "[a]mending the claims to recite a recombinant *E. coli* transformed with polynucleotides having specific SEQ ID NOS encoding

erythrose 4-phosphate dehydrogenase, 1-deoxy-D-xylulose-5-phosphate synthase, and pyridoxol 5'-phosphate synthase" (*Id.* at 4).

With a view towards furthering prosecution, claim 1 (from which claims 3 and 6-8 depend) has been amended as noted above. As amended, claim 1 recites, *inter alia*, specific primers to be used to obtain the recited enzymes, namely erythrose 4-phosphate dehydrogenase, 1-deoxy-D-xylulose-5-phosphate synthase, and pyridoxol 5'-phosphate synthase. It is respectfully submitted that claim 1, as amended, is of a scope that the Examiner has acknowledged is enabled. (Paper No. 20070926 at 2).

In view of these amendments, the Examiner's concern regarding the breadth of the claims is rendered moot. For the reasons set forth above, it is respectfully submitted that the rejection has been rendered moot and should be withdrawn.

Accordingly, for the reasons set forth above, entry of the amendments, withdrawal of the rejections and objection, and allowance of the claims are respectfully requested. If the Examiner has any questions regarding this paper, please contact the undersigned.



Respectfully submitted,

By: *Charles M. Avigliano*
Charles M. Avigliano
Registration No. 52,578
BRYAN CAVE LLP
1290 Avenue of the Americas
New York, NY 10104-3300
Phone: (212) 541-2000
Fax: (212) 541-4630